U.S. Environmental Protection Agency
Total Coliform Rule / Distribution System
Advisory Committee Meeting

February 20-21, 2008

Location:
RESOLVE
1255 23rd Street, NW, Suite 275
Washington, D.C. 20037

Meeting Summary

Meeting Objectives / Desired Outcomes:

- *Discuss possible options for revising the Total Coliform Rule;*
- *Provide direction to the Technical Work Group for assessing the implications of different options;*
- *Learn about EPA's plan for compliance with the Small Business Regulatory Enforcement Fairness Act;*
- *Learn about performance of analytical methods; and*
- *Discuss topics for upcoming TCRDSAC meetings.*

I. Welcome, Introductions, Meeting Objectives and Agenda

Crystal Rodgers-Jenkins, the Designated Federal Officer, opened the meeting and welcomed the meeting attendees and members of the Advisory Committee to this sixth meeting of the Total Coliform Rule / Distribution System Advisory Committee (TCRDSAC).[1]

Gail Bingham, the facilitator from RESOLVE, briefly reviewed the objectives of the meeting, the meeting agenda, and the meeting materials. She noted that the primary focus of the meeting was to develop a clear set of options for revisions to the Total Coliform Rule (TCR) to present to the Technical Work Group (TWG) for evaluation. She noted the importance of this milestone in the context of the proposed timeline for reaching an Agreement in Principle (AIP):

- April meeting: Review the TCR option comparison information from the TWG; attempt to reach closure on as many items as possible.
- May meeting: Try and reach tentative closure on one option for revising TCR.
- Between May and June meetings: Members consult with their constituencies.
- June meeting: Reach an agreement in principle pending ratification.
- July meeting: Ratify the agreement in principle.

She requested that members put issues raised by their constituencies on the table as quickly as possible so they can be worked out as early as possible.

[1] Please see Attachment A for the Total Coliform Rule/Distribution System Federal Advisory Committee roster. Please see Attachment B for a copy of the meeting agenda. Please see Attachment C for a list of the meeting attendees.

EPA responded to a question from an earlier meeting of the TCRDSAC about how the agency can coordinate implementation of the research and information collection recommendations, given changes in its contracting mechanisms. One approach could be periodic workshops to create and, possibly update, a research agenda. Other ideas can be discussed further as part of the Advisory Committee process. EPA's representative on the Committee also noted that, as in the past, EPA's Assistant Administrators in the Office of Water and the Office of Research and Development will be consulted and their approval obtained before EPA signs the agreement in principle to ensure that the commitment is on behalf of the entire agency.

II. December and January Meeting Summaries

The TCRDSAC approved by consensus the December meeting summary provided in their binders,[2] deleting the following text until the citation could be checked. The Committee agreed to add the information below to this February meeting summary with the appropriate citations, which are added here as follows:

> Published studies have shown that up to 50% of TC positives are due to sampling collection procedures, and that improving sampling location and procedures reduced positives from over 1% to about 0.5%.[3] A study in the U.K., using randomly selected sites in combination with fixed sites, attributed 50% of the positive results to selection of the sampling tap.[4]

Members also received a copy of the January meeting summary in their binders. The Committee agreed to provide comments on the summary by close of business on March 7.

III. Analytical Methods for Total Coliform and *E. coli*

Vanessa Speight, Malcolm Pirnie, gave a presentation on behalf of the Technical Work Group on the topic "Analytical Methods for Total Coliform and *E. coli*."[5] The objective of this presentation was for the TCRDSAC to learn about recent research on the performance of analytical methods relevant to the TCR.

During the discussion following the presentation, Dr. Speight responded to questions from Committee members and made the following points:

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[2] Please see Attachment D for a copy of the December TCRDSAC meeting summary.

[3] G.A.Burlingame and L.E.S.O'Donnell, 1993, "Coliform Sampling at Routine and Alternate Taps: Problems and Solutions," Proceedings of AWWA WQTC in Miami. Additional details can be found in the AwwaRF report "Sample Collection Procedures and Locations for Bacterial Compliance Monitoring" including examples from Fairfax County of complete elimination of coliform occurrences when they switched to dedicated sampling stations.

[4] E.E. Gelreich and M. LeChevallier, 1999, "Microbiological Quality Control in Distribution Systems," in R.D. Letterman (ed.), *Water Quality and Treatment: A Handbook of Community Water Supplies* (New York: McGraw-Hill, Inc): p. 18.28.

[5] Please see Attachment E for a copy of Dr. Speight's presentation "Analytical Methods for Total Coliform and *E. coli*."

- In general, the incubation time does not correlate to false positive or false negative rates for a given test.
- There also is no correlation between the cost of a method and its accuracy. Most methods cost roughly the same amount.
- There is no data in the Alternate Test Procedures (ATP) documentation on false positive or false negative rates for the three oldest total coliform (TC) analytical methods, which are the existing standard tests used for comparison.
- There are studies underway to determine through field tests the range of false positives and negatives for different analytical methods.
- The accuracy of the different methods depends on the water matrix of the sample. The buffer capacity of the water as well as background natural organisms present in the water can affect with the results. Studies are underway to look at the effect of water matrix.
- It is not clear that one analytical method detects more organisms than another.

The TCRDSAC discussed the information presented by Dr. Speight. During the discussion, members and observers made the following additional points about analytical methods:

- One member observed that it is possible to speed up the minimum timeframe indicated on slide 14 from five days to three days if a system resamples the same day it is notified of a positive result. The member also noted that it is possible to see growth in the culture before the full 24-hour period is complete.
- The timeframe from sampling to results has an impact on the regrowth of organisms as well as on the die-off of some organisms and the recovery of injured organisms.
- Many of the laboratory tests are more accurate for *E. coli* than for TC.
- There are harmful microbial organisms other than *E. coli* in water, such as *Campylobacter* or *Salmonella*, but there is no test other than classic microbiology that will look for them.
- It may be premature to dismiss older, slower analytical methods before more study of how these methods stand up against the newer, faster methods. There is disagreement in the microbiology community about which methods are the best.
- In some states only the results from samples marked “routine” or “repeat” are entered into the compliance database; in other states any results provided to the state must be entered.
- For rule-making, there has to be a baseline analytical method identified in the rule. The ATP process can then be used to approve additional methods. There also is a formal rulemaking process for disapproval of an analytical method.
- EPA has a Federal Register notice out on an expedited process for approving new methods that does not require rulemaking. This process, which is much faster than the rulemaking process, should be finalized this year.

Individual suggestions for revising the TCR included:

- defining the timeframe in which laboratories must report results to the system;
- including language in the rule that requires water systems to instruct laboratories to inform the state of positive sample results; and
- considering the timeliness of the test results in reformulating TCR as a way to improve public health protection.

IV. Initial Options Packages Discussion

Doug Owen, Malcolm Pirnie, provided the TCRDSAC with an overview of the initial option packages developed by four options drafting task groups of the Committee: Group 2, Group 3a, Group 3b, and Group 4.[6] (Note: Because Option 1 was defined as the existing TCR, there was no Group 1.) The objective for this presentation was to review the proposed option packages and give an overview of: the key changes from the current TCR; what would remain unchanged; and commonalities and variations among those initial options.

One Committee member put forth a fifth option package for the Committee's consideration (see section D below). Another member distributed written comments about the option packages.[7]

Ms. Bingham suggested the Committee use the questions on slide 26 of Mr. Owen's presentation to help frame their discussion of the initial option packages. General points raised during the discussion included the need to develop creative solutions for small systems, including seasonal systems, and the importance of targeting revisions to the rule to areas where there are the greatest problems, so that resources are invested most effectively. A Committee member also reminded the group that in October, the TCRDSAC had identified the following characteristics or criteria for a new TCR that might be worthwhile to revisit:

- Maintains or enhances public health protection
- Reduces burden
- Cost effectiveness
- Is simpler to implement
- Considers implications and linkages to other rules
- Reflects variations in system type and size
- Recognizes the value of effective operators
- Uses the optimal indicator for each purpose or objective
- Is supported by scientific data

Another member suggested adding "meets the current TCR objectives" to the list of criteria.

For each option, Ms. Bingham invited members to identify what was attractive about the option, what concerns or questions they had, and any gaps that needed to be filled. She reminded the Committee that the four option packages developed by the task groups do not necessarily reflect the formal positions of members, since the task groups were formed to generate a variety of options for purposes of comparison. The following sections highlight themes from the Committee's discussion of each option package. These themes were selected for this meeting summary for illustrative purposes, and were based on points that were repeated by more than one Committee member. However, the fact that some points were repeated and others were not may

[6] Please see Attachment F for a copy of Mr. Owen's presentation "Overview of Option Approaches from the Break-Out Groups." For a full description of the options developed by the task groups, please see the Overview of Initial Small Group Options for Revisions to the Total Coliform Rule matrix, a copy of which is available from the Designated Federal Officer.

[7] A copy of this member's comments is available from the Designated Federal Officer.

simply be due to the flow of the conversation and/or time constraints at this particular meeting. Discussions at future meetings are likely to reveal additional themes. For the complete list of pros, cons, and gaps mentioned during the February meeting discussion, see Attachment G at the end of this summary.[8]

A. Traditional Trigger Approach

A Committee member who participated on options development Group 2 began the discussion by giving a brief summary of the concept of a "traditional trigger approach.[9] After the summary, Committee members asked clarifying questions, and members of Group 2 made the following points in response:

- The proposed trigger would be the same as the non-acute violation under the current TCR. The group included two options for what happens when the trigger is reached: 1) the first time the TC trigger is reached, the system notifies the state, which could request some follow-up action. The second time the trigger is reached, the state is notified, but this time follow-up action is required; and 2) each time the trigger is reached, the system notifies the state and discusses possible action.
- Group 2 did not determine what to do when systems reach the trigger multiple months.
- Under this option, states would have flexibility in determining repeat monitoring locations because of the uniqueness of each distribution system.

Ms. Bingham then invited Committee members to identify the aspects of the traditional trigger approach that were most appealing to them. Recurring themes from this discussion included:

- The shift from an MCL to a trigger approach with follow up action for TC;
- Removing the requirement to monitor for fecal coliform;
- The simultaneous testing for TC and *E. coli* could shorten the time to any actions identified, which combined may provide more meaningful public health protection;
- Elimination of five follow-up samples; and
- The similarity to the current TCR will minimize costs of transitioning to a new rule.

Members also discussed their questions or concerns about the option and topics that still need to be addressed. From this discussion, the following general themes emerged:

- Is the trade-off of less repeat and follow-up monitoring for increased routine monitoring worth it from a public health perspective? Which monitoring gives the most information?
- The timing for the investigation and follow-up actions needs to be defined.

B. Baseline Provisions with Incentives

The Committee then turned to a discussion of two initial option packages based on the concept of "baseline provisions with incentives." Groups 3a and Group 3b developed options packages under this framework for the Committee's consideration.

[8] Please see Attachment G for the complete list generated by TCRDSAC members during the options development discussion for each options package.

[9] A copy of Group 2's option for the Traditional Trigger Approach is available from the Designated Federal Officer.

Group 3a. A Committee member who participated on options development Group 3a gave a brief outline of the group's proposal.[10] After the presentation, the Committee asked several clarifying questions, and members of Group 3a made the following points in response:

- Because non-transient non-community water systems (NTNCWS) have a consistent population for at least six months of the year, Group 3a decided these systems should be treated more like CWS than transient non-community water systems (TNCWS).
- The sample invalidation component is the same as in the current TCR.
- In order to qualify for reduced monitoring under this option, systems would have to correct all deficiencies identified in a sanitary survey. The Ground Water Rule (GWR) only requires correction of significant deficiencies. If a significant deficiency is not corrected, a sanitary survey violation occurs; if a non-significant deficiency is not corrected, the result would be defined by the state.
- This group presumed an action level approach for TC, but did not address all possible provisions of a rule, choosing instead to focus on the incentives portion.

The Committee then discussed what they found most attractive in Group 3a's proposal. Several aspects of this version of the "baseline provisions with incentives" option were noted by more than one Committee member, including the following:

- The incentives approach;
- The idea of allowing reduced monitoring;
- The state-approved sampling site plan as tool to connect system to regulatory agency;
- The idea of having a combination of some required criteria and others on flexible menu of criteria from which systems could have a choice in order to qualify for reduced monitoring;
- Removing the requirement to monitor for fecal coliform;
- Separating monitoring and reporting violations;
- Linkages to GWR;
- Having sanitary surveys as a criterion for reduced monitoring;
- Outlining guidance for implementation; and
- Revisions to public notice.

Members also discussed their questions or concerns about the option and topics that still need to be addressed. The following themes emerged this discussion:

- Criteria 3-12 are not all equally protective of public health;
- The option is complex, and could be hard for states to track; and
- State-defined significant deficiencies for sanitary surveys should not become federal violations.

Group 3b. A Committee member who participated on options development Group 3b summarized its "baseline provisions with incentives" approach for the TCRDSAC.[11] Committee

[10] A copy of Group 3a's option for Baseline Provisions with Incentives is available from the Designated Federal Officer.

[11] A copy of Group 3b's option for Baseline Provisions with Incentives is available from the Designated Federal Officer.

members raised several questions for clarification, and members of Group 3b made the following points in response:

- In this option, surface water systems (SWS) would not be required to monitor at the point of entry (POE) to the distribution system. Sample collection at the POE is not required for SWS under any rule, however, some systems collect at the POE at least daily.
- Although there could be a reduction or elimination of distribution system TC monitoring in SWS, these systems would still have to monitor for *E. coli* and disinfectant residual.
- Group 3b's definition of a distribution system could be changed based on input from the TWG and the TCRDSAC.
- Because maintaining a disinfectant residual is one of the requirements for reduction or elimination of distribution system TC monitoring, if a system fell below the minimum residual, it would have to go back to base monitoring for TC.

After these clarifications, members of the Committee discussed the components of this second "baseline provisions with incentives" option that were attractive to them. Three aspects of this option were noted more than once:

- The category distinctions made between different system types;
- The concept of incentives leading to proactive actions; and
- The inclusion of non-microbial monitoring.

Members then identified questions, concerns, and gaps in the option. The following were general themes that emerged:

- The option is complex and could be difficult to implement; and
- For systems with TC waiver, one *E. coli* positive sample should not result in acute non-compliance.

C. Baseline Provisions with Consequences

A Committee member who participated on the options development Group 4 summarized the group's "baseline provisions with consequences" approach.[12] Members then asked Group 4 to clarify aspects of their proposal. During this discussion, Group 4 made the following points in response:

- Triggers were not included in this option as written, but they would need to be determined.
- For systems in substantive or significant non-compliance, an immediate inspection and report would be performed by the system or certified third party. The inspector would be required to submit a copy of the report to the state.

Once again, Ms. Bingham invited the Committee to identify attractive features of this option. More than one member noted two aspects of this approach:

- Directing efforts towards systems with repeated problems; and
- Including sanitary surveys in compliance decision-making.

[12] A copy of Group 4's option for Baseline Provisions with Consequences is available from the Designated Federal Officer.

Members also discussed their questions and concerns about this option and gaps that needed to be filled. The themes that emerged from this discussion include:

- The idea of a "punitive" scheme sends too negative a message;
- The option added a lot of burden and responsibility for the states; and
- The thresholds that move different systems into the different groups needs to be defined.

D. Other Proposed TCR Revisions

A member of the Committee presented an additional option for the Committee's consideration. The proposal, the Public Water System Based Rule Option,[13] divides systems into two categories, non-community water systems (NCWS) and CWS, each with a different rule construct. The proposed rule construct for NCWS would be based on a maximum contaminant level (MCL) for TC and *E. coli*; the construct for CWS would be based on a treatment technique. In response to questions from the Committee, this member made the following clarifications about the option:

- As the TCRDSAC thinks about a new regulatory construct for the TCR, it should think about ways to reduce the number of monitoring violations and provide incentives for systems to gain a better understanding of what samples to take.
- This option changes the current TCR repeat monitoring requirements by eliminating: the 3 or 4 sample requirement based on population; the upstream/downstream and other point in the distribution system criteria; the GWR source samples (for GW systems treating to 4-log inactivation); and the five follow-up samples the next month.
- CWS would be required to take a minimum of 3 repeat samples unless there is only one sampling site.
- The option takes a conservative approach when there is an *E. coli* positive and requires that an alternate source of water be provided.
- The option removes both the MCL and the public notification requirement for CWS.
- There are several reasons the option keeps an MCL construct for NCWS: investigation and state involvement with a system occurs sooner with an MCL than with a TT, shortening the time of exposure; CWS can adjust chlorination if there is a problem, NCWS cannot; and the term "treatment technique" is confusing to most NCWS because they do not provide treatment.

During the discussion of this option, individual Committee members made the following points:

- NCWS should be addressed in a way that tries to improve their compliance.
- When a system is in violation, whether it violates an MCL or TT, the state issues a notice of violation letter. The letter can simply state that the system violated the TCR.
- It may be statutorily impossible to have an MCL for one class of systems and a TT for another. It would be difficult to make the case that it is possible to measure an MCL for one type of system and not for another.
- It may be possible to develop a TT construct that would address concerns about early communication with the state and quicker corrective action.
- Most states would not respond as quickly as outlined in the option to just an initial *E. coli* positive.

[13] A copy of the Public Water System-based Rule Option is available from the Designated Federal Officer.

The list of what the Committee found attractive about this option, as well as their concerns and questions can be found in Attachment G.

E. Additional Points About Revising the TCR Raised During the Options Discussions

During the discussion of each of the options above, individual Committee members made the following observations for further consideration in their deliberations about revisions to TCR which were not necessarily tied to that option and, thus, were not recorded on the detailed notes of pros, cons and questions included in Attachment G. These points included:

- The more barriers to contamination that are in place (TCR, plumbing codes, sanitary survey, plan review, technical assistance), the less monitoring will be needed over time.
- The revised rule needs to address small systems, non-community water systems, and seasonal systems that only sample a few times a year.
- The system categories need to be better defined.
- There needs to be a metric showing that increased sampling improves public health protection.
- Using historical data, it should be possible to make a risk determination of where to put resources. This includes looking at the historical relationship between the system and the state (i.e., sanitary surveys, additional actions beyond monitoring).
- If sanitary surveys are used as an option to get to reduced monitoring, the frequency of inspections should be increased. These inspections could be full sanitary surveys or less elaborate inspections carried out by licensed inspectors.
- Sanitary surveys do not necessarily have to be a state function; they could be licensed out to private entities.
- There are options that can be included in addition to continuous monitoring for disinfectant residual (ex: continuous turbidity monitoring, pH monitoring).
- The resources available to states will not increase if TCR is revised, so states and systems may have to make trade-offs (e.g., fewer additional sanitary surveys) in order to fulfill any new requirements.
- TCR does not currently require corrective action, like the GWR does.
- The term “significant non-compliance” is a specific term of art used by the EPA Office of Compliance.
- Historical data helps provide information about the integrity of a system. It can complement the data obtained through monitoring.

VI. General Options Discussion

On Day Two of the meeting, the Committee then drew on the initial options discussion to identify those provisions for specific rule elements that they would like the TWG to analyze, beginning with questions about system categories and rule construct and continuing with some of the questions posed at the end of Doug Owen’s presentation comparing the initial options. At the end of each of these discussions, the Committee provided specific direction to the TWG about options to evaluate. The summary below sets out the Committee’s directions to the TWG followed by highlights of the conversation leading to these requests.

1. What system categories should be used in the revised TCR?

The Committee asked the TWG to evaluate the following options for dividing system categories in a revised rule:

- *Compare the following system category options:*
  - *The 32 categories in the current TCR;*
  - *CWS and NCWS, with further division by population (the TWG should make an initial judgment about population breakdowns); and*
  - *The categories outlined in Group 3b's option package.*
- *In the interest of tailoring the solution to the problem, indicate the system sizes with the most problems.*
- *In a future analysis, provide information on seasonal systems.*

During the discussion of system categories, Committee members made the following comments:

- For consistency, consider keeping the first division of systems the way it is in the current rule (CWS, NTNCWS, and TNCWS).
- There is an opportunity in revising TCR to base system categories on what is being monitored (distribution system versus no distribution system, GWS versus SWS) rather than by the population served. To overcome the challenge of identifying which systems do not have a distribution system, states could allow such systems to request reduced monitoring.
- Another option is to put TNCWS in one category and CWS and NTNCWS in a second category, because the latter two systems have similar features.
- There could be three categories: large CWS, small CWS, and NCWS.
- The first division could be CWS versus NCWS because there is so much similarity among systems in each group:
  - Levels of exposure: CWS (residences) - long-term; NCWS (schools, businesses, etc.) - short-term
  - Disinfection status: most NCWS do not disinfect
  - Source water: Almost all NCWS are GWS
  - Exceptions to any of the above can be handled individually.
- After the initial division of categories, the subdivision could be by population. The number of subdivisions could be fewer than current rule to reduce complexity. The subdivisions could be different for each of the main system categories.

2. What should the rule construct be?

The Committee asked the TWG to perform analyses of the following options for the construct of a revised rule:

- *The current TCR, which has an MCL for TC and E. coli;*
- *MCL for E. coli and a treatment technique for TC, including investigation and corrective action.*

During the discussion of possible rule constructs, one member reminded the Committee that EPA is required by statute to regulate TC, so the revised rule must include either an MCL or a treatment technique for TC.

3. What should the baseline monthly monitoring provisions be?

The Committee provided the following direction to the TWG for evaluating options for baseline monitoring in a revised rule:

- *Compare the following baseline monitoring options:*
  - *Current TCR provisions*
  - *Larger systems follow the current monitoring requirements. Smaller undisinfected CWS take two samples a month. NCWS take one sample a month.*
  - *The approach outlined by Group 3b*
- *Determine the added value of increasing baseline monitoring to once a month.*
- *Estimate the number of small systems that monitor monthly, quarterly, annually.*
- *Evaluate the relative value of different sampling times and locations.*

A member of the TWG reminded the Committee that the data available for analysis reflects the current system sizes and monitoring practices, so it may be difficult to analyze by different sampling locations such as those put forth in Group 3b's option packages.

Members of the Committee also made the following observations during this discussion:

- If the system categories are CWS and NCWS: CWS should take two samples per month; NCWS one per month.
- Consider changes to baseline monitoring plan as a result of the GWR
- There is a difference between the monitoring required in the current rule and what is being carried out in current practice. The current level of monitoring for NCWS is one per month, but many states allow one per quarter or one per year.
- The question of how to transition from current monitoring plans has to be addressed in the revised rule.
- In the revised rule, sanitary surveys could be used to set the baseline monitoring.
- The analysis by the TWG will not reflect all the public health benefits for different monitoring schemes, because factors such as sanitary surveys cannot be measured quantitatively. Language can be included in the rule to give States the ability to change monitoring requirements to address specific system characteristic.

One member raised a question about the value of increasing baseline monitoring for some small systems to twice a month and noted that systems that now take four samples a year could see this increased to 24 samples a year. During the discussion, members commented that the TWG analyses may help illuminate this question. Some members also noted that the actual baseline for small systems in the current rule is one sample per month although, with reduced monitoring, actual practice can be four per year or one per year. These members suggested that with new reduced monitoring provisions and a reasonable plan for transitioning from the current to revised rule, the expectation is that well run systems would end up with no change in practice to their current monitoring scheme. The Committee also discussed the proposed increase in monitoring in the context of other proposed revisions, such as the change in the rule construct from an MCL to a treatment technique for TC, the elimination of both the five follow-up samples and the public notification after two TC positives, and whether reduced monitoring would be a sufficient incentive for the cost of investigation and follow up actions.

4. What should the repeat monitoring provisions be?

The Committee asked the TWG to perform analyses of the following options for the repeat monitoring in a revised rule:

- *For CWS: a total of three repeat samples, one at the original tap and 2 at the sources of contamination. For NCWS: a total of two repeat samples.*
- *Allow large CWS systems (serving greater than 96,001 and collecting 100 samples a month): three repeat samples for an E. coli positive routine sample; one repeat sampling for a TC positive routine sample.*
- *Keep the five follow-up samples as outlined in the current TCR.*
- *Eliminate the five follow-up samples.*

5. What criteria (or trigger) should be used to change the baseline monitoring scheme?

The Committee requested the TWG to provide the following analyses of thresholds for reduced monitoring:

- *Historical data:*
    - *Absence of TC positive in 5 years*
    - *One or fewer TC positives in past 12 months*
    - *Look at number of systems that might fall into those different categories (e.g. number with one TC positive in past 40 samples) – provide insight into how to set the criteria*
- *Sanitary survey with no defects*
- *The five items from Group 3b's option package:*
    - *Maintenance of residual*
    - *Absence of TC positives in the past xx samples*
    - *No monitoring and reporting violations*
    - *Satisfactory compliance with findings of sanitary surveys*
    - *Implementation of a cross-connection control program*

During the discussion of options for changing the baseline monitoring for a system, Committee members made the following points:

- Consider a more holistic package of options, as opposed to a single criterion, for reduced monitoring (e.g., those proposed by Group 3b).
- By the time the revised TCR is implemented, every system will have a current sanitary survey under either the GWR or the Interim Enhanced Surface Water Treatment Rule.
- Most states have done sanitary surveys in one form or another for the past 20 -100 years, although the surveys may not have included all eight elements. Very few systems, if any, would not have had a sanitary survey in the past decade.

6. What should trigger investigation and corrective action?

The Committee defined the following options for analyses related to triggers for investigation and corrective action in a revised rule:

Triggers for Action

- *TC positive samples above:*
  - *Large systems: greater than5%*
  - *Systems collecting less than 40 per month: two or more TC positives*
  - *Action is minor investigation*
- *Acute MCL*
- *A pattern of historical positives:*
  - *A trigger is exceeded two or more times in 12 months, action is expanded investigation*
  - *A trigger is exceeded in two consecutive months*
- *Recurring EC without violations (absence in repeats)*

Investigative Actions

- *Self-Evaluation*
  - *Could be reduced/basic version involving a few samples*
  - *Could be more extensive/detailed version involving sampling and other activities*
- *Full-Blown Investigation*
  - *Could include a third party (e.g. State, system staff if designated by State) performing part of the investigation*

During the discussion, Committee members raised the following additional points for consideration:

- Consider the trigger options proposed by Group 4: some level of non-compliance in monitoring; or failure to comply with suggested improvements of deficiencies found in an inspection or sanitary survey.
- The two-tiered response proposed by Group 2 is problematic because the first time the trigger is exceeded, reduced monitoring is revoked but no investigation or corrective action is required.
- Be careful to recognize that two TC positives in two consecutive months may not be related.
- Consider whether corrective actions should be part of the rule or in a guidance document.

VI. Small Business Regulatory Enforcement Act (SBREFA) Compliance

Joan Rogers of the EPA Office of Policy, Economics and Innovation briefed the TCRDSAC on EPA's Small Business Regulatory Enforcement Fairness Act compliance for revisions to the TCR.[14] She and Manisha Patel of the EPA Office of General Council answered questions from the Committee members. During this discussion, Ms. Rogers and Ms. Patel made the following additional points:

- At the April TCRDSAC meeting, the Committee will receive the executive summary of EPA's Small Business Advocacy Review Panel's report, which will include the

[14] Please see Attachment H for a copy of Ms. Roger's presentation "Regulatory Flexibility Act (FRA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA): Environmental Protection Agency's Small Business Advocacy Review Panel Process."

comments of the Small Entity Representatives (SER) so that the Committee also can consider these ideas in its deliberations.

- The panel has 60 days to complete its report once it is formally convened. The Panel for TCR will complete its report by March 31st.
- The Small Business Advocacy Review Panel meetings are by statute closed meetings. Its report and the complete list of SERs who provided comment to the Panel will be made public when the notice of proposed rulemaking is published. At that stage, the SBREFA process is open to public comment.
- EPA has shared products of the TCRDSAC with the SERs, who will provide comments to the Panel. The Panel considers these comments when it writes its report. The TCRDSAC also can consider the SER's recommendations in its deliberations.
- The EPA Administrator will consider both the Small Business Advocacy Review Panel report and the TCRDSAC Agreement in Principle when drafting the proposed revisions to the TCR.

VII. Public Comment

No members of the public offered comment at this meeting.

VIII. Next Steps and Action Items

Comments on the January meeting summary are due to RESOLVE by COB March 7. The TWG will next meet on April 8, 2008 in Washington, D.C. The TCRDSAC will next meet on April 9-10, 2008 in Washington, D.C.

NOTE: This document was prepared by the facilitators for consideration by the Total Coliform Rule Distribution System Advisory Committee and does not constitute a product of the Committee. The Total Coliform Rule Distribution System Advisory Committee is a federal advisory committee chartered by Congress, operating under the Federal Advisory Committee Act (FACA; 5 U.S.C., App.2). The Committee provides advice to the Administrator of the U.S. Environmental Protection Agency on revisions to the Total Coliform Rule, and on what information about distribution systems is needed to better understand the public health impact from the degradation of drinking water quality in distribution systems. The findings and recommendations of the Committee do not represent the view of the Agency, and this document does not represent information approved or disseminated by EPA.

Attachments

Attachment A – TCRDSAC roster*
Attachment B – Meeting agenda*
Attachment C – List of meeting attendees
Attachment D – December TCRDSAC meeting summary*
Attachment E – Vanessa Speight's presentation "Analytical Methods for Total Coliform and *E. coli*"*
Attachment F – Doug Owen's presentation "Overview of Option Approaches from the Break-Out Groups"*
Attachment G – Options Discussion Summary Matrix
Attachment H –Joan Rogers and Manisha Patel's presentation "Regulatory Flexibility Act (FRA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA): Environmental Protection Agency's Small Business Advocacy Review Panel Process"*

* The meeting presentations and other documents may be found online at http://www.epa.gov/safewater/disinfection/tcr/regulation_revisions_tcrdsac.html.

U.S. Environmental Protection Agency
Total Coliform Rule / Distribution System
Advisory Committee Meeting
February 20-21, 2008

Meeting Attendees

Ali Arvanaghi, U.S. EPA
Sarah Bahrman, U.S. EPA
Zeno Bain, U.S. EPA
David Baird, National Rural Water Association*
Pamela Barr, U.S. EPA*
Jeremy Bauer, U.S. EPA
Jennifer Best, U.S. EPA
Gail Bingham, RESOLVE
Eric Bissonette, U.S. EPA
Tracy Bone, U.S. EPA
Kevin Bromberg, SBA Advocacy
Erica Brown, Association of Metropolitan Water Agencies*
Gary Burlingame, Philadelphia Water Department
Joyce Chandler, U.S. EPA
Jimmy Chen, U.S. EPA
James Cherry, City of Virginia Beach Public Utilities
Sean Conley, U.S. EPA
Cesar Cordero, U.S. EPA
Gil Dichter, IDEXX Labs
Cynthia Dougherty, U.S. EPA*
Stephen Estes-Smargiassi, Massachusetts Water Resources Authority
Patti Fauver, Environmental Council of States*
Peter Ford, U.S. EPA
Colin Fricker, ASI
Kathy Grant, RESOLVE
Jeff Griffiths, Tufts University
Tom Grubbs, U.S. EPA
Yu-Ting Guilaran, U.S. EPA
Trish Hall, U.S. EPA
Andrew Hanson, U.S. EPA
Curtis Haymore, The Cadmus Group, Inc.
Christine Maloni Hoover, National Association of State Utility Consumer Advocates*
Dan Kroll, HACH Homeland Security Technologies
Maggie Lavay, U.S. EPA
Mark LeChevallier, National Association of Water Companies*
Debbie Lee, RESOLVE
Frank Letkiewicz, The Cadmus Group, Inc.
Carrie Lewis, American Water Works Association*
Maria Lopez-Carbo, U.S. EPA
Gary Lynch, National Association of Water Companies*
Erica Martinson, Inside EPA

Beth Messer, Environmental Council of States*
Mike Messner, U.S. EPA
Harvey Minnigh, Rural Community Assistance Partnership*
John Neuberger, Council of State and Territorial Epidemiologists*
Eva Nieminski, Utah Department of Environmental Quality
Darrell Osterhoudt, Association of State Drinking Water Administrators*
Doug Owen, Malcolm Pirnie
Graciela Ramirez-Toro, CECIA-IAUPR
Stig Regli, U.S. EPA
J. Kevin Reilly, U.S. EPA
Alan Roberson, American Water Works Association*
Crystal Rodgers-Jenkins, U.S. EPA
Kenneth Rotert, U.S. EPA
Rick Sakaji, East Bay Municipal Utility District
Tom Schaeffer, Association of Metropolitan Water Agencies
John Scheltens, American Water Works Association
Paul Schwartz, University of Southern California
Jerry Smith, Association of State Drinking Water Administrators*
Charlotte Smith, Charlotte Smith & Associates
Tim Soward, IntelliTech
Vanessa Speight, Malcolm Pirnie
Scott Summers, University of Colorado at Boulder
Jim Taft, Association of State Drinking Water Administrators
Ed Thomas, National Rural Water Association
Lynn Thorp, Clean Water Action*
Bruce Tobey, National League of Cities*
Steve Via, American Water Works Association
Bob Vincent, National Environmental Health Association*
Paul Whittemore, National Rural Water Association*
Beate Wright, Loudon County Sanitation Authority
Mae Wu, National Resources Defense Council*
Yvonne Yuen, U.S. EPA

* Committee member or alternate

TCRDSAC Meeting
February 20-21, 2008

OPTIONS DISCUSSION SUMMARY MATRIX

(List generated by individual TCRDSAC members)

OPTION	WHAT'S ATTRACTIVE?	QUESTIONS/CONCERNS/GAPS
2 - Traditional Trigger	• Emphasis on simultaneous TC and *E. coli* results • Inclusion of investigate, evaluate, improve approach • Minimizes states' transaction cost (many things stay the same from the current TCR) • Elimination of 5 follow-up samples • Attempt to use best scientific methods for determining TC and *E. coli* • Trigger concept for TC • More meaningful public notification • Reaction as close to an event as possible • Toolbox of corrective actions • Removal of fecal coliform from the rule construct • Removal of TC MCL • Requires corrective action • Trade off: Increased routine for decreased follow-up	<u>Questions</u> • What is the right trade off between less repeat sampling and more routine sampling? • How to ensure there will not be two tiers of public health protection in the end? • How do the differences between CWS and NCWS sampling requirements affect public health protection? Should there be differences? • How much is in rule (as opposed to guidance)? • How do you know what you get as result? • Are there differences in analytical methods for premise plumbing and the distribution system? • Should the sampling methods also be looked at? - <u>Concerns</u> • Increasing monitoring for smaller systems to 2 samples per month; what is the justification for the added burden? • Concept of reduced monitoring • Giving systems a pass for a month sends an inconsistent signal and is harder to track • TC and *E. coli* occurrence alone is not a good surrogate for public health • Tying the rule to an analytical methodology • Reducing monitoring based on historical data • Timing for small systems – once a year could be problem for some systems, like seasonal ones • A false sense of security for chlorinated systems (especially NCWS) • More routine samples means more monitoring and reporting violations for systems we know have good water quality • Losing the MCL violation for 2 TC positives may give the appearance of loss of public health protection • How to put "investigate, evaluate, correct" into a rule - <u>Gaps</u> • Timing for investigation and follow-up • Lack of transition plan from current TCR • How to tailor to different system types • Need to better define repeat vs. follow-up sampling Consequences if systems fail to take a repeat sample following an initial TC positive

3a – Baseline Provisions with Incentives	• Sampling site plan approved by the state o Connects the system to regulatory agency o Gives operator opportunity to decide sampling sites • Idea of reduced monitoring • Concept of criteria for reduced monitoring • Including sanitary surveys as a criterion • The incentives approach • Removal of fecal coliform from the rule construct • Tracking monitoring and reporting violations separately • Provides guidance for implementation • Public notification component • Coordinating sanitary survey requirements between TCR and GWR by requiring sanitary surveys for SWS equal to those of GWS • Linking monitoring to the GWR • No corrective action leads to a violation • Indicator changes • Simultaneous testing for *E. coli* and TC • Layout of base monitoring and reduced monitoring • Two TC positives are no longer a violation • Good supplement to Group 2's option • No MCL for *E. coli* • Creates mechanism for working with problem systems • Past good behavior is rewarded • Recognition that dealing mainly with small systems	<u>Questions</u> • How many systems would qualify for reduced monitoring? • How should base monitoring, repeat monitoring, and follow-up monitoring be balanced? What information does each provide? - <u>Concerns</u> • The remaining criteria (#3-12) are not equally protective of public health. • Require 3-4 criteria be met instead of 2 • The complexity of the option, with multiple criteria and different system categories, is hard for states to track • Allowing states to define sanitary survey deficiencies that become federal violations. • Follow-up action creates burden for states (need to make systems proactive) • Increase to base monitoring • Need better linkages between TC monitoring and GWR. • Using historical data as criterion for reduced monitoring • Dropping the MCL violation for TC • Reduced monitoring to quarterly for seasonal systems may not be frequent enough • Keeping the 5 follow-up samples • Timeframe of 20 days for response is too long • Potential variability and error in self audits (but using 3rd party or licensed professionals, may be expensive • Focuses too much on well-functioning systems - <u>Gaps</u> • Incomplete for large systems • Opportunity to take one sample should be expanded beyond systems with only a hand pump (expanded definition of a small system) • Follow-up actions are not defined (significant evaluation or just a letter?) • Clearly defined trigger to go back to base monitoring • Timing of sanitary surveys and notices • How to address seasonal systems • Transition plan between the current and revised rule, and how to manage the interim between the final rule and implementation • Timeline for sampling plan to be approved by state; consider making the sampling plan an ongoing communication between the system and the state • Possibly include change in operator as a trigger to go back to base monitoring • Consider allowing states to pick additional requirements from criteria #3-12 • Modify consequences/public notification for "any

		monitoring violation in the past year"
3b - Baseline Provisions with Incentives	• The different categories that make distinctions between system types • The incentive approach; inclusion of proactive incentives • Achieves public health notification faster • The level of detail • The similarities and parallels between the different categories • Consecutive TC positives results in an acute non-compliance • Not performing follow-up action results is an acute non-compliance • Sanitary survey as a criteria for reduced monitoring • Point of entry monitoring • Provides options for reduced monitoring for large systems • Continuous disinfectant residual monitoring using analyzers • Allows for a non-microbial indicator • Simpler than the current TCR construct because there are fewer size categories	<u>Questions</u> • What happens if something goes wrong when system is under reduced monitoring? • Is there a need for a 4-log virus reduction before the residual? • What are the payoffs for categorizing systems this way? - <u>Concerns</u> • Too complex (consider including the detail in guidance) • Requiring compliance point of entry monitoring increases the resource intensiveness and complexity of the rule • Different system categories are treated differently • Not sure if reduced monitoring for larger systems is the right amount to get public health benefit • The time lag to get to public notification • Possibility of a federally required cross-connection control programs in interior plumbing • For systems with a TC waiver, going to acute non-compliance after only one *E. coli* positive • The potential that systems would not do continuous monitoring of residual if it could lead to acute violation • Places a lot of burden on the state to figure out how to administer - <u>Gaps</u> • Options for faster public notification • What triggers return from reduced monitoring to baseline • Options for reductions may be too restrictive (are mainly "ands" – maybe should be "ors") • Frequency of sanitary surveys
4 - Baseline Provisions with Consequences	• Directs resources at systems with repeated problems • Ties sanitary surveys to compliance decisions • Provides potential tools for assessing system vulnerability, and how to divide systems based on their vulnerabilities • Certified system operators and licensed plumbers do inspections • Framework of systems for determining compliance • Punitive structure is determined by the type of system	<u>Questions</u> • Where is the line drawn between different compliance categories? • What enforcement actions are appropriate? - <u>Concerns</u> • Requiring additional monitoring for systems with problems draws resources and attention away from fixing the problems, and creates more violations and wastes resources • The punitive construct • Adds burden on the states • Starting with a sanitary survey: if the state does not perform one, then the system does not have to act • The categories are too complicated

	• The format could be used for other options • The concepts and the key points • Acknowledgement that the cause of every problem will not be found • Ties system history and compliance with monitoring requirements • Periodic inspections (as opposed to full sanitary surveys)	• Increased monitoring • Hard to put arms around • Increased TC monitoring is cheaper than corrections (TCR does not require corrective action like GWR) • Use of historical data - <u>Gaps</u> • What triggers systems to move from different compliance categories • A better definition of what is a system that is in trouble • What are acceptable monitoring resources
PWS-based Rule Option	• Highlights the need to address NCWS • Dividing systems by CWS and NCWS • The concept of a quick response is good (but hard for states to do) • Sense of urgency	<u>Concerns</u> • One *E. coli* positive leading to a boil water advisory or do-not-use • Laboratory reporting should not be a federal requirement • Some of the provisions would not translate well to CWS • MCL for one class of systems, and a Treatment Technique for another • Federally required cross-connection control program • Annual sampling conflicts with the sense of urgency • Would not work in states other than Minnesota